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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/539,246

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Yasuhiro Okumoto

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EXAMINER

EMPIE, NATHAN H

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/539,246	Applicant(s) OKUMOTO ET AL.	
	Examiner NATHAN H. EMPIE	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,6-9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al (US patent 5,726,920 hereafter '920).

'920 teaches a processing system (col 3 line 55 – col 4 line 36) comprising:

a processing section /step for continuously processing a member to be processed (fab lines 101 a/b extending from upstream production steps / equipment (not shown) (col 5 lines 24-28);

an inspection section / step for inspecting a processed state of said member processed by said processing section (test equipment such as and operation of FWS test station (110), Fig 1A/B, col 5 lines 44-47);

a processed state determination section / step for determining whether said processed state is defective/nondefective on the basis of a result of inspection performed by said inspection section (data signals (125) collected from test head (115-118) are sent to a database computer (150) to determine defective regions of wafers) (Fig 1 A/B, col 7 line 31- col 8 line 41);

a continuity determination section for determining whether or not the defective determination is made more than once when said processed state is determined to be

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defective by said processed state determination section (computer (150) analyzes data and recognizes when excessive numbers of failures are detected wherein data is gathered with respect to time) (col 9 lines 6-13) (examiner interprets the plurality of the statement “excessive number or failures” to satisfy more than once).

and a processing control section for controlling processing so as to stop processing of said member continuously performed by said processing section when said continuity determination section determines that said defective determination is made more than once (computer (150) can issue a shutdown instruction for a defective fabrication line if excessive number of failures occur) (examiner interprets the plurality of the statement “excessive number of failures” to satisfy more than once)

wherein the processing step is not stopped when a defective determination is rendered once (computer (150) can issue a shutdown instruction for a defective fabrication line if excessive number of failures occur) (col 9 lines 5-22) (examiner interprets the plurality of the statement “excessive number or failures” to satisfy more than once).

‘920 does not explicitly teach wherein the defective determination is made more than once and consecutively, nor wherein stop processing of said member continuously performed by said processing section when said continuity determination section determines that said defective determination is made more than once and consecutively. However, ‘920 teaches that (computer (150) can issue a shutdown instruction for a defective fabrication line if excessive number of failures occur, wherein the data gathered from (150) is collected as function of time from a consecutive stream

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of tested samples.) (col 9 lines 5-22) where the examiner interprets the plurality of the statement “excessive number or failures” to satisfy “more than once”; and wherein one of ordinary skill in the art would appreciate that data gathered with respect to time would suggest a record of failures can be made consecutively. Additionally ‘920 further teaches database (190) tracks the progress of each wafer (col 5 lines 7 – 15), and wherein computer (150) is coupled to, and in communication to (190) (col 7 lines 52 – 63, col 25 lines 15 – 65)); teaching that computer (150) tracks the progress of each wafer over time, so one of ordinary skill in the art would appreciate that trends of each wafer in the process could be recorded and analyzed to optimize the process. Based on such teachings, it would have been obvious to one of ordinary skill in art at the time of invention to have made defective determination more than once and consecutively, and to have stopped processing when defective determination was made more than once and consecutively.

Further, ‘920 teaches, if the defective determination is determined to have been made more than once and consecutively, a previously processed non-defective member is reprocessed and analyzed for defects before processing is stopped (see, for example, col 9 lines 5 – 25, wherein verification of the test station is conducted by using a known-good wafer (113) to test the suspect FWS test station (110) before a line shutdown is authorized).

Claim 2, 7: ‘920 teaches the processing system / method according to claim 6/1 (described above), further comprising: a re-inspection section /step (110’) for re-inspecting said processed member (wafer disposition / inking station 107 can be

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instructed by way of control path 161 to return "defective" wafers for further testing by a different 'known to be good' test station (110')) (col 9 lines 26-39);

and an inspection state determination section / step for determining said inspected state determined by said inspection section, on the basis of a result of inspection performed through said re-inspection section (trend reports (180) are gathered by (150) from 110 and 110' (col 9, lines 44-51), the computer can use collected differentiable data to detect problems due to defects in specific test fixtures (110, or 110') (col 12, lines 25-34)

Claim 3, 8: '920 teaches the processing system / method according to claim 6/1 (described above), further comprising: a defective level determination section / step for determining a defective level determined by said processing state determination section, wherein, when said defective level determination section determines that said defective state has reached a predetermined level (a comparator module (440) compares accumulated data from the test stations against a respective alarm limit) (col 17 lines 1-7), processing of said member continuously performed by said processing section is halted by said processing control section (comparator module (440) issues an alarm signal or other automatically initiated response by way of functional connection (445) (col 17 lines 8-14), the automatically initiated reaction can be one of the generation of an automatic shutdown control via (155) and (161-163) (Fig 1A) (col 17 lines 35-44)).

Claim 4, 9: '920 teaches the processing system/method according to claim 6/1 (described above), wherein, when said continuity determination section determines that

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said defective determination is continuously made (comparator module (440) (col 17 lines 8-14)), processing of said member continuously performed by said processing section is temporarily suspended for awaiting an external command for said processing control section (comparator module (440) issues an alarm signal or other automatically initiated response by way of functional connection (445) (col 17 lines 8-14)), and wherein the continuous processing is suspended by said processing control section in accordance with said external command (the automatically initiated reaction can be one of the generation of an automatic shutdown control via (155) and (161-163) (Fig 1A) (col 17 lines 35-44)).

Claim 11: '920 teaches all of the limitations to a processing method (as described above in the rejection to claim 1), but '920 does not teach a computer-readable recording medium with a program recorded thereon for controlling a processing system, having a processing section for continuously processing a member to be processed, and an inspection section for inspecting a processed state of a member processed by said processing section, the program causing said computer to perform processing of the above described steps. It would have been obvious to one having ordinary skill in the art at the time the invention was made to place a program for controlling a processing system as described above, since it has been held that broadly providing an automatic means to replace manual activity which has accomplished the same result involves only routine skill in the art. *In re Veneer*, 262 F.2d 91, 95, 120 USPQ 193, 194.

Claims 5 and 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over '920 in view of Tamaki (JP 2000-269108 A, hereafter '108).

'920 teaches the processing system / method according to claim 6 / 1 (described above), and a said continuity determination section (comparator module (440)) to determine that said defective determination is continuously made (accumulating data lie outside pre-defined, expected ranges) and it teaches the comparator module (440) issues an alarm signal or other automatically initiated response (col 17 lines 1-44), but it does not specifically teach a processing condition change control section which performs control for changing conditions employed by said processing system to process said member when defective determination is continuously made. '108 teaches a management system for a semiconductor fabrication device which is capable of not only stopping a semiconductor fabrication line, but issues orders to change the manufacturing installation to solve the problem of defect generation (abstract and [0015-0017]). When the results obtained from the computer (150) and comparator module (440) of '920 identify that the problem is occurring at one of the fabrication line stations (col 14 lines 60 – col 15 line 7) it would be advantageous if the automatically initiated response would be one of a process condition change. Both '920 and '108 teach systems to monitor and improve the yield of semiconductor processing lines, thus it would have been obvious to one of ordinary skill in the art at the time of invention to have incorporated the action of altering the process condition as described by '108 as an appropriate automatically initiated response for the system described by '920 to

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more quickly and efficiently fix problems occurring in the fabrication line to improve its yield.

Response to Arguments

Applicant's arguments filed 7/20/09 have been fully considered but they are not persuasive. Applicant argues that amendments stating the defective determination is made more than once and "consecutively", and that the processing step is stopped according to such a defective determination overcome what is taught by '920; however, as described in the rejections made above, '920 teaches that (computer (150) can issue a shutdown instruction for a defective fabrication line if excessive number of failures occur, wherein the data gathered from (150) is collected as function of time from a consecutive stream of tested samples.) (col 9 lines 5-22) where the examiner interprets the plurality of the statement "excessive number or failures" to satisfy "more than once"; and the examiner interprets data gathered with respect to time to satisfy consecutively). Additionally '920 further teaches database (190) tracks the progress of each wafer (col 5 lines 7 – 15), and wherein computer (150) is coupled to, and in communication to (190) (col 7 lines 52 – 63); teaching that computer (150) tracks the progress of each wafer over time. Further '108 teaches the process involves the generation and reliance upon historical trend reports (see, for example, col 9 line 44 - col 10 line 28, col 28 line 17 – col 29 line 24). This watchdog process involving data collection / comparison / tracking taught by '108 encompasses conventional statistical process control (SPC); in which the examiner asserts that trends such as a series of consecutive failures / outliers would be immediately appreciated by those of ordinary skill in the art to be a potential

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problem requiring an appropriate reaction. Based on such teachings, it would have been obvious to one of ordinary skill in art at the time of invention to have made defective determination more than once and consecutively, and to have stopped processing when defective determination was made more than once and consecutively.

The applicant's argues that "Chen fails to teach or suggest the claimed 'wherein, if the defective determination is determined to have been made more than once and consecutively, a previously processed nondefective member is reprocessed and analyzed for defects before processing is stopped'" (pg 6 of remarks) and that "wafer 113 (of Chen) is merely used to calibrate variables 126 and 127. The system in Chen does not reprocess and reanalyze wafer 113 for defects." (pg 5 of remarks). The examiner asserts that wafer 113 is explicitly taught to be a "known-good wafer" therefore it must have been originally processed (as it is a tangible article) and analyzed to ensure that it is in fact "known-good" (col 9 lines 5-25). Wafer 113 is then reprocessed (wafer 113 is loaded into a processing station 110) and analyzed (station 110 performs a verification testing / analysis process) "before a line shutdown is authorized" (see, for example col 9 lines 5-25). Therefore Chen has taught the disputed claim limitation and the rejection is maintained.

As to the dependent claims, they remain rejected as no additional separate arguments are provided.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to NATHAN H. EMPIE whose telephone number is (571)270-1886. The examiner can normally be reached on M-F, 7:00- 4:30 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Cleveland can be reached on (571) 272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/N. H. E./
Examiner, Art Unit 1792

/Michael Cleveland/
Supervisory Patent Examiner, Art Unit 1792